IN THE FIGURES:

Applicants submit herewith two sheets labled "New Sheet" with new Figs. 4 and 5 pursuant to 37 CFR 1.121(d).

Fig. 4 shows the rotary spraying device with rotating spray head 23 is as shown in Fig. 1 of US Patent 7,341,763 cited by the Examiner. Rotary spray head 25 is used to spray onto the inner surface 1.2 of a hollow cylinder, namely, cylinder 26.

The precision turning can be accomplished by a similar machine fitted with a grinding or polishing head 22, accordingly, in Fig. 5 the spray head is replaced by a machining head.

REMARKS

Status of Claims

Claims 1-10 were presented for examination. Claims have been amended for clarity as required by the Examiner, and the preferred limitation has been removed from claim 3 to new claim 11.

Accordingly, claims 1-11 are now presented for examination.

Drawings

Corrected drawing sheets in compliance with 37 CFR 1.121(d). The drawings do not show the rotating spraying tool in relation to the cylindrical surface or sleeve which is being sprayed, and there is no showing of the precision turning operation or any other of the method steps. Note that the circumferential direction shown in Figure 3 is an arrow in a blank space with some odd shapes floating about and Figure 3 does not convey any meaningful information about the invention.

In response, Applicants submit herewith two sheets labled "New Sheet" with new Figs. 4 and 5 pursuant to 37 CFR 1.121(d). Fig. 4 shows the rotary spraying device with rotating spray head 23 is as shown in Fig. 1 of US Patent 7,341,763 cited by the Examiner. Rotary spray head 25 is used to spray onto the inner surface 1.2 of a hollow cylinder, namely, cylinder 26. The precision turning can be accomplished by a similar machine fitted with a grinding or polishing head 22, accordingly, in Fig. 5 the spray head is replaced by a machining head.

Upon acceptance of the new figures, Applicants will amend the specification to provide narrative description of the new figures.

Claim Rejections - 35 USC § 112

Claims 1-10 are rejected under 35 U.S.C. 112, first and second paragraphs, as failing to comply with the enablement requirement, and as being indefinite. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

(1). Note that the specification describes the microstructure of the sliding surface as

being oriented in the circumferential direction without defining what is meant by the circumferential direction.

(2). Also, a transverse orientation of the roughness is not defined.

(3). In addition, the recesses are described as forming a flow obstacle, and this is unclear.

(4). Finally, Applicant uses an unconventional term, which is not defined: the Peklenit factor.

In response, Applicants (1) refer the Examiner first to paragraph [0024] of the specification as filed, teaching "The support surface 2 forms a hollow cylinder with a bearing axis 1.3." A cylinder only forms one axis – the center axis. Further, "The degree of roughness of the surface 1.2 amounts to at most 0.5 mm. The roughness is defined as the difference between the largest and smallest distance from the surface 1.2 to the bearing axis 1.3." With roughness defined as the as the difference between the largest and smallest distance from the surface 1.2 to the bearing axis 1.3, it follows that the bearing axis can only be the center axis of the hollow cylinder. The difference between the largest and smallest distance from the cylinder surface to the cylinder center axis is the depth of the roughness of the surface.

Further, paragraph [0026] teaches that the spraying process is by means of a burner which rotates in the circumferential direction 7 and the melting of all the material particles results in the production of a topography as shown in FIG. 3 on the surface 1.2. FIG. 3 shows a sliding surface 1 designed as a running sleeve for a piston of an internal combustion engine. The running direction 6 of the piston is indicated by an arrow.

Imagine standing in the middle of a cylindrical room, holding in one hand a bucket of paint, with a hole in the bottom of the bucket. If you whirl about, paint will be flung onto the walls of the cylindrical room. The paint droplets will not form a circle at the point of impact, rather, they will be elongated in the circumferential direction due to the velocity imparted by spinning.

A cylinder is defined by its circumference about the center axis. As the rotating spray head sprays particles onto the hollow cylinder, the particles have not only a radial velocity, but also a velocity transverse to the radial, as imparted by the rotation of the spray head. This will cause the deposited particles to be non-spherical, but rather, to be elongated about the circumference, i.e., in the circumferential direction. The deposited droplets will form

elongate peaks, with elongate valleys between them, the elongate valleys having the same orientation as the elongate peaks, i.e., in the circumferential direction.

Turning now to points (2) and (3), by valleys being transverse to the direction of piston movement, they form flow obstacles, good for retaining oil for good lubrication. If instead the valleys were oriented on the same direction as the direction of sliding of the piston, the valleys would not form obstacles to the flow of oil, and oil would be more rapidly lost from the bearing surface and require more continuous replenishment. Accordingly, "taransverse orientation of the roughness" and "recesses forming a flow obstacle" are related concepts.

Turning finally to (4) Peklenit factor, Applicants apologize, there appears to have been a typographical error, this should have been the well known "Peklenik factor" which is defined as, beginning with an elliptical cross section of the roughness peaks, then the Pelkenik factor is the relationship between the half radius in the axial direction to that in the circumferential direction, that is, the value >1 in an orientation of the roughness peaks in the axial direction and values <1 in an orientation in the circumferential. (see H. Peeken, P. Ayanoglu, G. Knoll, G. Welsch, "Measurement of lubricating film thickness, temperature and pressure in gear contacts with surface topography as a parameter" Institute for Machine Elements and Machine Design, Technical University Aachen, W. Germany, Volume 3 Issue 1, Pages 33 – 42. Published Online: 2 Mar 2006. See also: SPASS Spaltströmungssimulation, Version 2.0, © 2008 Institut für fluidtechnische Antriebe und Steuerungen, der RWTH Aachen (http://www.ifas.rwth-aachen.de) page 13 "die sogenannten Peklenikfaktoren g der Komponenten. Geht man von einem elliptischen Querschnitt der Rauigkeitsspitzen aus, so ist der Peklenikfaktor das Ver14 SPASS Benutzerhandbuch hältnis des Halbradius in axialer Richtung zu dem in Umfangsrichtung, d.h. dass Werte >1 einer Ausrichtung der Rauigkeitsspitzen in axialer Richtung und Werte <1 einer Ausrichtung in Umfangsrichtung entsprechen."

See also:

Elasto-hydrodynamische Simulationstechnik mit integriertem Mischreibungskontakt

Elastohydrodynamic Simulationtechnology with Integrated Mixed Lubrication

G. Knoll

Dedicated to Prof. K.-H. Zum Gahr on the occasion of his 60th birthday

946 DOI: 10.1002/mawe.200300684 Mat.-wiss. u. Werkstofftech. 2003, 34, No. 10/11

2 Tribo/mechanische Kennwertbildung rauer Oberflächen

Mikrohydrodynamik rauer Oberflächen: Zur Charakterisierung der mikrohydrodynamischen Eigenschaften rauer Oberflächen entwickelten Patir und Cheng [14] das Konzept der Flusstensoren und wiesen nach, dass neben der Rauheitsamplitude auch das Rauheitsprofil und dessen Orientierung die Schmierfilmbildung beeinflussen. Die Orientierung wird durch den Peklenikfaktor γ beschrieben, der aus dem Längenverhältnis der Rauheitsfunktion, längs und quer zur Bewegungsrichtung gebildet wird (→ abgeleitet aus der Autokorrelationsfunktion). Bei Peklenikfaktoren $\gamma < 1$ sind die Rauheitsprofile überwiegend quer zur Strömungsrichtung gestellt, wodurch die hydrodynamische Tragdruckentwicklung begünstigt wird.

Next, the Examiner points out that a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite.

In response, Applicants have removed the preferred limitation from claim 3 to new dependent claim 11.

Finally, the claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

In response, Applicant has reviewed and revised the claims for clarity and for conformity with US practice.

Accordingly, it is respectfully submitted that the application is in condition for allowance.

Applicants have reviewed this further art and have no further comment.

The Commissioner is hereby authorized to charge any fees which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account Number 16-0877.

Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.

Respectfully submitted,

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